

From the INTERNATIONAL BUREAU

**PCT**NOTIFICATION CONCERNING  
TRANSMITTAL OF COPY OF INTERNATIONAL  
PRELIMINARY REPORT ON PATENTABILITY  
(CHAPTER I OF THE PATENT COOPERATION  
TREATY)

(PCT Rule 44bis.1(c))

To:

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Date of mailing (day/month/year)

09 September 2011 (09.09.2011)

**R E C E I V E D**  
**SEP 20 2011**Applicant's or agent's file reference  
ART052PCT**GROSSMAN, TUCKER,  
PERREAU & PFLEGER, PLLC**

IMPORTANT NOTICE

International application No.

PCT/US2010/025464

International filing date (day/month/year)

25 February 2010 (25.02.2010)

Priority date (day/month/year)

25 February 2009 (25.02.2009)

Applicant

ARTHROSURFACE INCORPORATED et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

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# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference ART052PCT	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. PCT/US2010/025464	International filing date ( <i>day/month/year</i> ) 25 February 2010 (25.02.2010)	Priority date ( <i>day/month/year</i> ) 25 February 2009 (25.02.2009)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant ARTHROSURFACE INCORPORATED		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- |                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input type="checkbox"/>            | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 338 82 70	Date of issuance of this report 30 August 2011 (30.08.2011)  Authorized officer  <div style="text-align: center; font-weight: bold;">Simin Baharlou</div>  e-mail: pt09.pct@wipo.int
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## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To: PAUL KROON  
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PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year)

03 MAY 2010

Applicant's or agent's file reference  
ART052PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US2010/025464

International filing date (day/month/year)

25 February 2010

Priority date (day/month/year)

25 February 2009

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - A61F 2/38 (2010.01)

USPC - 623/20.14

Applicant ARTHROSURFACE INCORPORATED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US  
Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450, Alexandria, Virginia 22313-1450  
Facsimile No. 571-273-3201

Date of completion of this opinion

15 April 2010

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300  
PCT OSP: 571-272-7774

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITYInternational application No.  
PCT/US2010/025464

## Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into \_\_\_\_\_ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

- 2.
- ☐
- This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

## a. (means)

- ☐ on paper
- ☐ in electronic form

## b. (time)

- ☐ in the international application as filed
- ☐ together with the international application in electronic form
- ☐ subsequently to this Authority for the purposes of search

- 4.
- ☐
- In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	12-18	YES
	Claims	1-11, 19-25	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-25	NO
Industrial applicability (IA)	Claims	1-25	YES
	Claims	None	NO

**2. Citations and explanations:**

Claims 1-11 and 19-25 lack novelty under PCT Article 33(2) as being anticipated by Hyde, Jr. (hereafter Hyde).

Referring to claim 1, Hyde discloses a method for preparing an implant site in bone (Abstract), comprising: establishing a reference axis (CH1) extending from said bone; creating a bore in said bone by reaming about said reference axis (Col. 3, Lns. 42-51; Figs. 2A-2R, 3 and 5); securing a guide block (guide assembly 12) about said articular surface (as in Fig. 3); establishing a first working axis (CH2) extending from said bone using said guide block (Col. 3, Lns. 42-51; Figs. 2A-2R, 3 and 5), said first working axis (CH2) is displaced from said reference axis (CH1; Figs. 2A-2R where CH2 is displaced from CH1); and creating a first socket (via core cutter 30) in said bone by reaming about said first working axis (Fig. 5), wherein said first socket partially overlaps with said bore (Figs. 2A-2R, 3 and 5).

Referring to claim 2, Hyde discloses all limitations of claim 1, and further discloses wherein said guide block comprises a body including a base portion and sidewall portions having a generally arcuate shaped exterior surface (Figs. 4A-4C) generally configured to engage with the saddle and ridge portions of a patient's trochlear region (Col. 22, Lns. 29-32 – The method and apparatus according to the present invention can generally be applied to any articular joint having at least two major bones. Further examples include, but are not limited to the... knee; Col. 10, Lns. 31-34).

Referring to claim 3, Hyde discloses all limitations of claim 2, and further discloses wherein securing said guide block further comprises advancing a protrusion extending generally from a body of said guide block into said bore (Figs. 5, 7, 8 and 10).

Referring to claim 4, Hyde discloses all limitations of claim 2, and further discloses wherein securing said guide block further comprises advancing at least one pin (pins 14) through a passageway (the unnumbered passageway formed about pins 14 in Figs. 3-5) in said body and into bone (Figs. 3-5, pin 14) proximate to said trochlear region (Col. 23, Lns. 39-42; Col. 10, Lns. 31-34).

Referring to claim 5, Hyde discloses all limitations of claim 2, and further discloses establishing a second working axis (CH2) extending from said bone using said guide block (Col. 3, Ln. 60 – Col. 4, Ln. 3.), said first working axis (CH1) is displaced from said reference axis (CH2) and creating a second socket in said bone (Col. 9, Lns. 10-18) wherein said second socket partially overlaps with said bore (Figs. 2L-2R) and wherein said first and second sockets and said bore are generally aligned along an inferior-superior plane of said articular surface (Figs. 2A-2R; Col. 23, Lns. 39-42).

Referring to claim 6, Hyde discloses all limitations of claim 2, and further discloses advancing a reamer through a cavity extending through said body of said guide block after said guide block is secured to said articular surface (Figs. 5 and 6); inserting a guide bushing into said cavity subsequent to advancing said reamer (as in Figs. 10 and 11), said guide block comprising a first excision passageway configured to receive a shaft of said reamer along said first working axis (as in Figs. 5, 6 and 7), wherein a said radial cutter of said reamer is disposed adjacent to said articular surface (Figs. 8, 9A, 9B, 14A, 14B, 23 and 24); and rotating said reamer within said first excision passageway and advancing said radial cutter into said articular surface to form a first socket (Figs. 8, 9A, 9B, 14A, 14B, 23 and 24; Col. 14, Lns. 1-5).

Referring to claim 7, Hyde discloses a system for repairing a defect on an articular surface of a patient's trochlear region (Col. 8, Lns. 38-41; Col. 23, Lns. 39-42), said system comprising: a guide block (guide assembly 12) comprising: a body having an exterior surface configured to engage (via pin 14) with the saddle portion and ridge portions of said patient's trochlear region (Col. 22, Lns. 29-32 – The method and apparatus according to the present invention can generally be applied to any articular joint having at least two major bones. Further examples include, but are not limited to the... knee); a protrusion extending generally from said body and configured to be received in a first bore formed in said articular surface along a reference axis (Figs. 5 and 6); and a first cavity extending through said body configured to establish a first working axis (CH2; Fig. 2A); wherein said exterior surface of said body and said protrusion are configured to secure the location of said guide block about said patient's trochlear region (Figs. 3-5; Col. 23, Lns. 39-42).

Referring to claim 8, Hyde discloses all limitations of claim 7, and further discloses wherein said body includes a base portion and sidewall portions having a generally arcuate shaped exterior surface (Figs. 4A-4C) generally configured to engage with the saddle portion and ridge portions of said patient's trochlear region, respectively (Col. 23, Lns. 39-42).

**WRITTEN OPINION OF THE  
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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.  
Continuation of:

Referring to claim 9, Hyde discloses all limitations of claim 8, and further discloses further comprising a pin (14) and a first passageway (unnumbered passageway formed about pin 14 in Figs. 3-5) extending through said body configured to receive said first pin (Figs. 3-5), wherein said first pin is configured to engage bone proximate to said trochlear region (Col. 22, Lns. 29-32 – The method and apparatus according to the present invention can generally be applied to any articular joint having at least two major bones. Further examples include, but are not limited to the... knee), and wherein said exterior surface of said body, said protrusion, and said first pin extending through said first passageway are configured to secure the location of said guide block about said patient's trochlear region (Figs. 3-5; Col. 23, Lns. 39-42).

Referring to claim 10, Hyde discloses all limitations of claim 9, and further discloses further comprising a second pin (pin 14) and a second passageway (unnumbered passageway formed about pin 14 in Figs. 3-5) extending through said body configured to receive said second pin (Figs. 3-5), wherein said second pin is configured to engage bone proximate to said trochlear region (Col. 23, Lns. 39-42), and wherein said exterior surface of said body, said protrusion, and said first and said second pins extending through said first and second passageways are configured to secure the location of said guide block about said patient's trochlear region (Figs. 3-5; Col. 23, Lns. 39-42).

Referring to claim 11, Hyde discloses all limitations of claim 7, and further discloses wherein said protrusion is configured to be received in said first bore in a generally interference-type fit (Figs. 3-5).

Referring to claim 19, Hyde discloses all limitations of claim 7, further comprising a second cavity extending (Figs. 2H-2J, 2N and 2O) through said body configured to establish a second working axis (CH2) displaced from said reference axis (CH1), wherein said second working axis is configured to define a center point of a third bore (AH1, AH2) in said articular surface.

Referring to claim 20, Hyde discloses the system of claim 19, further wherein said first and second cavities and said protrusion are configured to be generally aligned along an inferior-superior plane of said articular surface (Figs. 2H-2J, 2N, 2O, 3, 4A-C and 5).

Referring to claim 21, Hyde discloses all limitations of claim 7, and further discloses further comprising a drill guide (Col. 7, Lns. 4-7 – The first non-articular surface SA is preferably superficial to a surface of a body part such as extremities and, therefore is more accessible to a surgeon for commencing drilling the first bone) configured to establish said reference axis substantially perpendicular to said articular surface (as in Figs. 2C-2F, 2K, 2N, and 2P-2R).

Referring to claim 22, Hyde discloses the system of claim 21, further wherein said drill guide (guide assembly 12) comprises: a cannulated shaft (cylindrical shaft 31); and a proximal end comprising a first and second groove contacting tip (pins 14) configured to contact said articular surface in saddle the saddle portion of said trochlear region along the inferior-superior plane and a first and second tip configured to contact said articular surface generally along the inferior-superior plane (Figs. 3 and 5; Col. 22, Lns. 29-32 – The method and apparatus according to the present invention can generally be applied to any articular joint having at least two major bones. Further examples include, but are not limited to the... knee).

Referring to claim 23, Hyde discloses the system of claim 22, further wherein said first and said second groove contacting tips (pins 14) are fixedly coupled to the cannulated shaft (cylindrical shaft 31; Figs. 3 and 5) and wherein said first and said second ridge contacting tips are moveable with respect to said cannulated shaft and are biased towards to an extended position (note the relative positions of pins 14 and cylindrical shaft 31 in Figs. 3 & 5).

Referring to claim 24, Hyde discloses the system of claim 22, further comprising a reference pin (guide wire 10) configured to be received through said cannulated shaft (cylindrical shaft 31) and secured into bone beneath said articular surface generally along said reference axis (Figs. 3 & 5; Col. 22, Lns. 29-32 – The method and apparatus according to the present invention can generally be applied to any articular joint having at least two major bones. Further examples include, but are not limited to the... knee).

Referring to claim 25, Hyde discloses the system of claim 24, further comprising an excision device (core cutter 30), said excision device comprising a cannulated shaft (cylindrical shaft 31) and a radial cutter (annular cutting element 32) comprising a cutting surface (teeth 33) disposed about a distal end of said shaft, wherein said excision device is configured to be received over said reference pin (guide wire 10) to form said first bore (CH1), said first bore being centered around said reference axis (Fig. 11 at anchoring screw 86).

Claims 12-17 lack an inventive step under PCT article 33(3) as being obvious over Hyde, Jr. (hereafter Hyde) in view of Ek.

Referring to claim 12, Hyde discloses all limitations of claim 7, but is silent on further comprising a first guide bushing configured to be removably received in said first cavity, said first guide bushing defining a first excision passageway generally aligned with said first working axis. Ek, however, teaches of a system and method for joint resurface repair (Title) comprising a first guide bushing (10) configured to be removably received in a first cavity (Para. [0166]), said first guide bushing defining a first excision passageway (16) aligned with said first working axis (as in pin 20 in Figs. 9a and 9b). It would have been obvious to one of ordinary skill in the art to incorporate the guide bushing of Ek with the system of Hyde for the purpose of protecting a passageway in bone from unintended damage.

Referring to claim 13, Hyde in view of Ek discloses all limitations of claim 12. Hyde fails to further disclose wherein said first guide bushing is configured to threadably engage said first cavity. Ek, however, further teaches wherein said first guide bushing is configured to threadably engage said first cavity (Ek, Figs. 1-3b). It would have been obvious to one of ordinary skill in the art to provide wherein said first guide bushing is configured to threadably engage said first cavity, as taught by Ek, to the system of Hyde, for the purpose of securing a bushing in a passageway.

Referring to claim 14, Hyde in view of Ek discloses all limitations of claim 12. Hyde further discloses an excision device (Hyde, 70), said excision device comprising: a shaft (Hyde, 73); and a radial cutter comprising a cutting surface (Hyde 74 and 75) disposed about a distal end of said shaft (Hyde Fig. 12B).

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**Supplemental Box**

**In case the space in any of the preceding boxes is not sufficient.**

**Continuation of:**

Referring to claim 15, Hyde in view of Ek discloses all limitations of claim 14. Hyde further discloses forming a second bore (Hyde CH2) in said articular surface partially overlapping with said first bore (Hyde Figs. 2K-2R), wherein said second bore is centered around said second working axis (Hyde Figs. 2K-2R), but fails to explicitly disclose wherein said first excision passageway is configured to receive said shaft of said excision device. Ek, however, further teaches wherein said first excision passageway is configured to receive said shaft of said excision device (as in Ek pin 20 passing through channel 16 in Figs. 9a and 9b). It would have been obvious to one of ordinary skill in the art to provide wherein said first excision passageway is configured to receive said shaft of said excision device, as taught by Ek, to the system of Hyde, for the purpose of protecting the excision passageway from damage by the reamer.

Referring to claim 16, Hyde in view of Ek discloses all limitations of claim 15. Hyde further discloses wherein said radial cutter is disposed adjacent to said articular surface (Hyde Figs. 2A-2R), but fails to explicitly disclose wherein said guide bushing is configured to be received in said first cavity such that said shaft of said reamer extends through said first excision passageway. Ek, however, further teaches wherein said guide bushing (10) is configured to be received in said first cavity (Ek, Para. [0161]) such that said shaft (20) of said reamer extends through said first excision passageway (16; as in Ek Figs. 9a and 9b). It would have been obvious to one of ordinary skill in the art to provide wherein said guide bushing is configured to be received in said first cavity such that said shaft of said reamer extends through said first excision passageway, as taught by Ek, to the system of Hyde, for the purpose of protecting the excision passageway from damage by the reamer.

Referring to claim 17, Hyde in view of Ek discloses all limitations of claim 16. Hyde further discloses wherein said first cavity is configured to allow said radial cutter to pass through to said articular surface in a direction along said second working axis (as in Hyde Figs. 2A-2R).

Claim 18 lacks an inventive step under PCT article 33(3) as being obvious over Hyde, Jr. (hereafter Hyde) in view of Ek and Augustino et al. (hereafter Augustino).

Referring to claim 18, Hyde in view of Ek discloses all limitations of claim 17, but are silent on further comprising indicia on said shaft configured to be aligned with said first excision passageway to define depth of said bore. Augustino, however, teaches of facet joint prosthesis measurement and implant tools (Title) comprising indicia (407) on a shaft (402) configured to aligned with an excision passageway (Figs. 5A, 5B and 6C, Col. 5, Lns. 41-46). It would have been obvious to one of ordinary skill in the art to incorporate indicia on said shaft configured to be aligned with said first excision passageway to define depth of said bore, as taught by Augustino, in the system of Hyde, for the purpose of finding the appropriate or desirable depth of a bore.

Claims 1-25 meet the criteria set out in PCT Article 33(4) and thus have industrial applicability because the subject matter claimed can be made or used in industry.